

AVIATION

The Oldest American Aeronautical Magazine

AUGUST 31, 1925

Issued Weekly

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The Italian Airship N2 in flight

VOLUME
XIX

SPECIAL FEATURES

NUMBER
9

ITALIAN AIRSHIP N2
THE FOKKER-KANSAS CITY COMPANY
WAR TIME ANTI-AIRCRAFT STATISTICS

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The Tribute of the Press.

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"It will be remembered that during last year's Light Aeroplane Competition at Lympne the 'Bristol' Cherub 'swept the board,' but the successes this year are even more remarkable and they reflect very vividly the extraordinary reliability of the 'Bristol' made product compared with those emanating from other manufacturing centres."

"The results of the Air Race Meeting at Lympne during the week-end were once again a complete triumph for 'Bristol' manufacturers, and it was absolutely proved that amongst light aeroplane engines there is no present day rival to the 'Bristol Cherub'."

Times Echo

At the August
Air Race Meeting
at Lympne
Aeroplanes fitted with

Bristol

CHERUB AIRCOOLED ENGINES

Won 5 out of 6 Races

In the remaining race "Bristol" Aeroplanes fitted with "Bristol" Aero Engines were **2nd** and **3rd**.

In the race for the Grosvenor Challenge Cup the **1st, 2nd, 3rd, 4th** and **5th** machines were fitted with "Bristol" Cherub Engines.

In the competitions for altitude and speed over a measured course aircraft with "Bristol" Cherub engines

WON 3 out of 4 EVENTS

and second place in the remaining event

*If you desire fuller details of the results
please write, or cable, us for them.*

THE BRISTOL AEROPLANE CO., Ltd.

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The Anti-Aircraft Tests

WHILE the anti-aircraft tests have not as yet been completed there are certain definite results that have been accomplished, not the least of which has been to create in the mind of the public an impression of the futility of anti-aircraft as a coast defense weapon. Whether or not this impression has been made by the airplane assaults which have looked only to the high lights, the fact remains. As a result, the Coast Artillery officers who have wanted like any making a last stand against an enemy, probably not rightly, that their "hole" constructors or otherwise have gone for sought as far as the public is concerned. While the public in giving the strange name that a "dread" has been let a down lines out of so many thousand shots, their emotional thrill is not in the direction of the ground but with the pilot who has scored the target through the field of fire.

It is recognized everywhere, and nowhere better than in the Army, that strong opinions have to be used to keep about changes in the military and naval mind. The old industry-society differences were carried on with a bitterness on the part of the infantry, and a hatred by the navy that did not interest the public to the same extent that the air problem has caught the popular imagination. Instead of a controversy among branches of one service, the anti-aircraft question is applied by the General Staff of the Army and the General Board of the Navy, while the attention is disappointed by the strong presence of both services, causing some quarters perhaps, but nevertheless with that confidence that arises from some to have as the result of their experience. The extent to which the particular line gone is illustrated by the dissemination of the tests as "indiscriminate stuff" by Colonel Mitchell and comparing the anti-aircraft shooting to "chasing birds on a tree to put out their tails" by Congressman La Guardia who saw several times alongside the testing plane so as to get a close-up view of the target.

On the other side, bulletins are issued to the newspapers that state that "the testing plane while maneuvering as per service conditions will fly straight for at least one-half mile of each course at constant altitude and constant speed so as to simulate landing." Nothing is said about the location of the gun with respect to the course, and the velocity that would be taken advantage of, under actual service conditions. The altitude of the tests with the tests took gun has been about five thousand feet so that the question could be the target. What would happen at the normal landing altitude under true service conditions is not stated. In all fairness, however, it should be remembered that these tests are to be considered tests of accuracy of fire and dependability of ammunition and not a simulated service test. When, however, the impression is created that the conditions are those that would obtain in actual warfare the position the sea, the altitude and the velocity should all be considered.

Recently, General Sweeney sold, in speaking of the tests, "It must be admitted that no money's air forces will get on balance, in assurance for ground defense." Here, again, the impression is created that the Coast Artillery has made the tests with equipment that is available for use against the enemy in actual defense of the country. At Fort Tilden, there were two batteries of four gun each. The defend or to make an enemy force coming through the air and the effect of anti-aircraft, if they should make an attack on New York, a thousand or more such guns would be required to carry out the General's reasoning words. When the number of anti-aircraft guns and numerous stories of ammunition that would be required to create this condition for all cities on both coasts is tallied, the sum becomes too large to consider, especially when Congress appears to be unconvinced by the demonstration that has made.

The publicity of the tests reminds one of the looking tests made with the battleships. At that time, the tests were conducted, and definitely stated to be, tests of accuracy of handling and efficiency of bombs. But afterward some of the Navy writers made the statement that it took so many hours to sink a ship, and made direct comparison with the time taken to sink ships by gunfire at Jaffa. Recently, in the present anti-aircraft tests, when the target was hit with a fragment of shrapnel the attacking air force was repelled and when an hit was made the enemy planes were victorious. These statements are the result of trying to carry water on both shoulders of making the comparison between the tests, making remarks about service conditions in the navy. To those who have had the opportunity of observing the statements given out by the older services during the last few years, there has seemed to be an effort made to repudiate accusations of self-written victories and ridiculous self-revelations.

A particularly good illustration of the uncertainty of "victory" was shown when one target was "shot down." There went up from the ground forces and everybody was happy. There was a real demonstration that could actually be seen. But when the few lines were examined it was found that the hit had merely cut the towing wire many feet from the front of the target. This is an instance of the poor condition of the tests that results from the use of constructive aims.

That there has been a real development in anti-aircraft weapons should be welcomed by all. The Ordnance Department and the strong presence of the Coast Artillery have shown that there are possibilities with ground defense, given a large appropriation to equip the country with the guns. Whether or not money should be spent on this sort of defense or on applied directly to strength will be one of the debatable questions resulting from these tests. With the results stated in their true light the Air Service has nothing to lose and should be glad that the tests have been made as they will show just what may be expected of this form of ground attack, should it be developed by an enemy.

corporation's present business includes contracts with the United States Government, upon which work is now being performed.

The new corporation will add 15,000 shares of preferred and participating stock and 15,000 shares of common stock for \$1,500,000 in cash, or until such part thereof as the Board of Directors deems advisable. The amount of which will be used for the equipment of the Kansas City plant and for working capital in the development of this business in the coming year.

With the remaining 4,000 shares of preferred and participating stock and 14,700 shares of common stock, there will be acquired by the new corporation all the stock and property and business of the Atlantic Airplane Corporation, including the Folger patents, licenses, and agreements with Mr. Folger and his Holland company.

Extended Earnings

The development of the commercial field for the airplane in America is apparently of great importance to the corporation as pointed out in its plan. It is the intention of the corporation to proceed systematically in this development, offering open their members to the assistance of the new corporation from time to time for payments upon their subscriptions to the Kansas City plant, and so far as practicable, to avoid investing such capital in fixed plant until the industry has become established in its field. Based upon Mr. Folger's Kansas City experience, this is a conservative and wise course to follow and should be productive, eventually, of large profits.

Based upon the utilization of the proceeds of the enterprise of 20,000 shares of preferred and participating stock and 20,000 shares of common stock, the Kansas City, New Jersey plant has produced annually one thousand planes of the various types under construction. From which, when the market is developed, the net profits should average not less than \$500 each, or total annual net earnings of \$500,000 when used in mass production has reached this volume.

The management of the new corporation will consist of Mr. Folger and his selected associates who will have the active cooperation of the new Board of Directors which will be composed of prominent leaders, industrial managers and engineers of Kansas City, Chicago and New York.

In order to secure a continuance of this management, the entire issue of common stock in the new corporation will be deposited in a trust fund for a period of five years from the date of its issuance, of which the first three years will be held by Arthur H. G. Folger Joseph F. Purser of Kansas City and Fred H. Ford of New York, or their trustees. The common stock will be deposited with the New York and National Bank and Trust Company of Kansas City. No dividends will be paid until the third year after the date of its issuance. Mr. Folger will be granted an option for five years from the date of incorporation of the new corporation to purchase 3,000 shares of common stock, (being one third of the common stock sold with this issue of preferred and participating stock) at \$200 per share, the proceeds thereof to belong to the subscribers pro rata.

The statement of the Committee acting for the Kansas City Syndicate gives some interesting data as the result of their investigation. In brief, it is as follows:

All the general line States are systematically less companies in the United States engaged in the manufacture of airplanes, all of which are engaged almost entirely in Army and Navy work. With the exception of one or two small concerns, all the plants are located on or near the Atlantic coast, west of Chicago, or near the Canadian border. There are a few other concerns of minor importance attempting the manufacture of airplanes.

Until recently, development of industry in America has been largely the governmental purpose. However, there are many small commercial transportation companies and a few larger ones being developed throughout the United States. Furthermore, the government is systematically less companies are here to any and extensive development along such lines is expected in the near future. The development of a new flying field and the new concerns in quality overwriting a great potential market into an actuality.

The following are the market possibilities for efficient, well-constructed aircraft:

1. Various commercial air and transportation routes being established and developed.
2. Air mail routes to be operated by the United States government.
3. Air Mail routes to be operated by private subsidized air transportation companies.
4. Private use by firms and individuals requiring rapid transportation.
5. The many hundred air taxi transportation companies.
6. Pleasure and recreation.
7. Great export trade which is now absolutely open and ripe for development.



Arthur H. G. Folger

Five hundred commercial planes are being used in regular commercial air transportation service in Europe. Based upon the more rigorous possibilities, the United States alone would require immediately 5,000 planes at a cost of \$100,000,000. The development of commercial air transportation in Europe is the ideal of the United States.

The United States Government New York-San Francisco Air Mail Route, which operates on any day in each direction every 24 hrs., requires one day for every fifty miles of mail route, or a total of fifty days.

On the same basis, the proposed air mail route covering 25,000 mi. would require 500 days, costing \$12,500,000 which would have to be replaced annually. A conservative estimate

of the cost (future development) is less than the above. An extended ultimate development of the commercial plane will reach the point where there will be one in use for each 1,000 population is concerned as by statistics as set at all countries. Should this situation point be attained, 300,000 units at various kinds would be required, which will mean 30,000 new units annually for replacement. No nation will contain that the use of 300,000 ships at the money will be the minimum.

General Plans of New Corporation

Generally, it is Mr. Folger's plan to establish the principal manufacturing plant in the midst of the United States and proceed to develop as rapidly as expanded commercial aircraft suitable to the use in the United States and also to foster and assist in building up the various transportation companies for the use of airlines. His purpose is to substitute only such government work as may be profitable to the corporation.

Location

The establishment of the principal manufacturing plant in Kansas City is considered exceedingly favorable in comparison with other locations for the following reasons:

1. Greater security in time of war than any other city.
2. Natural possibilities for having superior commercial air transportation routes in all directions, radiating from Kansas City.
3. Close proximity to the many proposed air mail routes and commercial transportation routes being planned for the next future.

4. Exceptionally favorable labor conditions and a good supply of trained manufacturing and metal mechanics needed in aircraft production.
5. Topographic conditions favorable to the development of flying.

Management

The management of the company will be in the hands of Mr. Folger and his associates, who are experts in industrial development and operation in the United States, and it is believed and expected that with a production of 300 to 500 planes annually, or over, that the company may be operated at a profit.

Mr. Folger has decided to come definitely from Amsterdam, Holland, to the United States. He wants to devote all of his time, energy and ability to America. He was deeply and warmly interested by the possibilities of this country when he began negotiations with them. It is his desire to become an American citizen as soon as possible.



The latest Folger airplane plus the CS

Mr. Folger's close cooperation with, and assistance in the development of commercial airlines in Europe give him a most valuable experience in the manufacturing and development of the industry in the country. Impressed with the general progress and political conditions of Holland and Europe in general, in view good possibilities in the United States where such facilities are now required.

Purpose of Stock Issue

The \$2,500,000 cash received by the company will be used for the following purposes:

The establishment of a plant in Kansas City for the development and marketing of aircraft suitable to conditions in North America.

The purchase of engines and other stock necessary for the production of a number of airplanes of different types

for which there is an existing and increasing demand for the preparation for seasonal, quantity production and to a limited extent for participation in the development of new transportation. In this connection, it is proposed to import one three engine and a few single engine light passenger carrying commercial planes from Mr. Folger's Holland plant which will be used essentially for demonstration purposes and to serve as models for the proposed production in this country.

3. The improvement of the flying field and plant at Hawthorne, N. J., in an expanded air terminal and repair station.

4. The perfection of a sales organization and flying field personnel necessary for the proper development of the airplane industry.



The 501 A flying plane owned by Mr. Folger company of Holland

The detailed operation program and the use of the money apportioned over the next twelve months has been studied by the committee. Provided it is decided if the initial development of the business which Mr. Folger foresees does not come up to expectations the rate of the expenditures are decreased according to the actual conditions. The capital is sufficient to carry on, if necessary, several years of slow development; this is expected but also to meet certain requirements of immediate expansion if conditions warrant it in the very near future. Mr. Folger is willing to make contracts with references to the possibilities in America because of the men and materials, but it is conservatively estimated that with the expenditure of the money as above outlined and facilities provided, therefore, the Kansas City-New Jersey plant can very easily manufacture annually 1,000 planes varying from the average single motor to the large airplane type, and that the net profits on these planes should average not less than \$500 each. This would yield an annual net earnings of \$500,000 and that production should be reached in two or three years' time.

Houston Barber Returns

Houston Barber, President of Barber & Baldwin, Inc., American Underwriters and Aeronautical Engineers, 10 West 42nd Street, N. Y., called from Southampton per the "Heron" on Aug. 15, and returned to his office at the 21st Street, Boston & Lincoln, Mass., established. He brought with him a Mr. Lush, 15th Street, London, England, and it is reported that the company's activities are steadily increasing.

Fast Mapping Service

An aerial map of Arthur Hill was put on exhibition July 29 at the Post Authority office at 11 Broadway, during the hours on the proposed occupation of the bridges to connect Staten Island and Jersey mentioned. The map was made in the second half of August from the first time the airplane was delivered to the headquarters of the Photo-Aerial Survey, Inc., 279 West 34th St., New York. The vertical aerial photographs were taken by photographer O. Russell in a camera plane piloted by Mr. J. L. Lutz. Twenty exposures were made at twenty-foot and twenty-five-foot altitudes. The plane then returned to its base at Garden City, L. I. and the negatives were rushed to New York.

Description of the Goodyear Pilgrim

By H. T. KRAFT

Chief Aeronaut Engineer, The Goodyear Tire & Rubber Co.

The general layout of The Pilgrim deviates considerably from past practice of so-called blimp design, the principal changes being in the suspension, rear construction, keel construction, and the design. The ship has some characteristics of a semi-rigid which allow it to be loaded in the longer in some instances without serious deformation of the hull and thereby considerably reduces fabric strain and the stresses for high altitudes.

Keel Weighs Only 30 Pounds

The keel is a magnesium girder of triangular section, tapering at the ends and is 21 ft. long. The keel weight is 30 lb. and is based on the design of the envelope after the ship is inflated. It is readily removable and full facilities are afforded for adjusting any of the suspension cables that reduce to the top of the envelope and three spread out into two longitudinal members. The keel is attached to the envelope at a single point, a circular cross section at all times except for a slight indentation at the point of attachment at the top of the envelope. The keel is supported to the hull by a series of wires which are very short and rigid and the difficulty of perfect adjustment of these cables is entirely eliminated.

All the rear of the keel there is a steel "backbone" which extends to the keel at the center of gravity of the engine. This backbone acts primarily as a larger arm to relieve the rear of the horizontal reaction of the engine. The engine is mounted to a construction rubber and fabric base which is fastened to the keel, eliminating any direct mechanical connection between the power plant and the keel. The upper end of the backbone is also fitted with similar material to dampen the vibration and incorporate a ball and socket joint to allow free articulation at the point of attachment to the keel. A keel line blade penetrates with spacer in used which gives a higher efficiency than the window type. The projectile weight is 32 lb.

The engine is constructed of steel tubing of 9.00 in. wall 375 in. diameter. The keel is covered with 0.02 lb. gauge canvas sheathing with which are epoxylated envelopes of heavy gauge. One section of the keel was given a 5,000 lb. elastic limit before it failed, which indicates that the keel is very light and strong and will withstand severe loading shocks. The interior of the keel is upholstered in blue rubber cloth with anodized finish over the window lines. Seats are provided for one pilot, two passengers and a mechanic at the rear for the motor mechanism.

Power Plant Arrangements

The fuel system consists of a Stewart Warner tank which works satisfactorily on a small engine of this horsepower. The engine is a 60 hp. Wright (L-6), three cylinder radial and has a constant speed carburetor mounted below the exhaust drive to a muffler which considerably reduces the exhaust noise. The instrument and controls are conveniently located on board ahead of the pilot with throttle and spark control arranged on the left side of the pilot seat. The fuel tank is provided for manual control with the electric wheel at the right side of the pilot's seat for vertical control. The envelope has a capacity of 50,000 cu. ft. of helium gas and has an aspect ratio of 3.4 to 1. Two valves are provided, one for discharging gas in extreme emergencies and the other for inflating control. During all general flying conditions there should be no cause for valving helium in view of the great airworthiness of the ship dynamically.

The rear cross construction is a rubber inflated diaphragm from the main design. The structure consists of a tube 35 ft. long, 3.6 in. in diameter of 9.00 in. wall and has an inflating

cable which attach to the interior of the envelope. These cables greatly tend to hold the nose end even at low pressure. It is of the self supporting type and resembles a hose and arrow construction where the tube supports the arrow. Stability is an item of importance on a small ship of this type and large surface will strengthen being decided upon to give the ship constant maneuvering qualities.

The envelope is 185 ft. long and 35 ft. 6 in. in diameter. This shape being selected because of its resistance as well as long construction from the standpoint of surface area. The hull has no end inflating with its center of volume located over the center of displacement so that there should never

Performance

be any serious speed-brake conditions during flight. The ship has a speed of 51 mph and a fuel consumption of 4.6 gal. per hr. While provisions are made for carrying two passengers and the pilot, the weight carried depends upon the desired cruising radius and the desired ceiling. The gasoline tank has a capacity of 32 gal.

A small mooring mast attachment is on the ship. It consists of a 32 in. diameter aluminum spinning assembly bolted to a fabric reinforcement located on the under side of the ship near the nose. This was done for simplicity of attachment and the intention of having a mast that is not 16 ft. high which can be easily transported and erected in a few minutes. The release is either contracted from the ground or from the air and the mooring consists of a doll pin which is withdrawn by a cord and permits the ship to be released at will.

Characteristics

TYPE AIRCRAFT

General	
Volume (displacement)	50,000 cu. ft.
Volume (with 75% inflation)	37,500 cu. ft.
Length	185 ft. 6 in.
Diameter	35 ft. 6 in.
Weight (empty)	4,000 lb.
Weight (with 75% inflation)	4,000 lb.
Weight (with 100% inflation)	4,000 lb.
Weight (with 125% inflation)	4,000 lb.
Weight (with 150% inflation)	4,000 lb.
Weight (with 175% inflation)	4,000 lb.
Weight (with 200% inflation)	4,000 lb.
Weight (with 225% inflation)	4,000 lb.
Weight (with 250% inflation)	4,000 lb.
Weight (with 275% inflation)	4,000 lb.
Weight (with 300% inflation)	4,000 lb.
Weight (with 325% inflation)	4,000 lb.
Weight (with 350% inflation)	4,000 lb.
Weight (with 375% inflation)	4,000 lb.
Weight (with 400% inflation)	4,000 lb.
Weight (with 425% inflation)	4,000 lb.
Weight (with 450% inflation)	4,000 lb.
Weight (with 475% inflation)	4,000 lb.
Weight (with 500% inflation)	4,000 lb.
Weight (with 525% inflation)	4,000 lb.
Weight (with 550% inflation)	4,000 lb.
Weight (with 575% inflation)	4,000 lb.
Weight (with 600% inflation)	4,000 lb.
Weight (with 625% inflation)	4,000 lb.
Weight (with 650% inflation)	4,000 lb.
Weight (with 675% inflation)	4,000 lb.
Weight (with 700% inflation)	4,000 lb.
Weight (with 725% inflation)	4,000 lb.
Weight (with 750% inflation)	4,000 lb.
Weight (with 775% inflation)	4,000 lb.
Weight (with 800% inflation)	4,000 lb.
Weight (with 825% inflation)	4,000 lb.
Weight (with 850% inflation)	4,000 lb.
Weight (with 875% inflation)	4,000 lb.
Weight (with 900% inflation)	4,000 lb.
Weight (with 925% inflation)	4,000 lb.
Weight (with 950% inflation)	4,000 lb.
Weight (with 975% inflation)	4,000 lb.
Weight (with 1000% inflation)	4,000 lb.

General Dimensions and Characteristics	
Length	185 ft. 6 in.
Diameter	35 ft. 6 in.
Volume (with 75% inflation)	37,500 cu. ft.
Volume (with 100% inflation)	50,000 cu. ft.
Volume (with 125% inflation)	62,500 cu. ft.
Volume (with 150% inflation)	75,000 cu. ft.
Volume (with 175% inflation)	87,500 cu. ft.
Volume (with 200% inflation)	100,000 cu. ft.
Volume (with 225% inflation)	112,500 cu. ft.
Volume (with 250% inflation)	125,000 cu. ft.
Volume (with 275% inflation)	137,500 cu. ft.
Volume (with 300% inflation)	150,000 cu. ft.
Volume (with 325% inflation)	162,500 cu. ft.
Volume (with 350% inflation)	175,000 cu. ft.
Volume (with 375% inflation)	187,500 cu. ft.
Volume (with 400% inflation)	200,000 cu. ft.
Volume (with 425% inflation)	212,500 cu. ft.
Volume (with 450% inflation)	225,000 cu. ft.
Volume (with 475% inflation)	237,500 cu. ft.
Volume (with 500% inflation)	250,000 cu. ft.
Volume (with 525% inflation)	262,500 cu. ft.
Volume (with 550% inflation)	275,000 cu. ft.
Volume (with 575% inflation)	287,500 cu. ft.
Volume (with 600% inflation)	300,000 cu. ft.
Volume (with 625% inflation)	312,500 cu. ft.
Volume (with 650% inflation)	325,000 cu. ft.
Volume (with 675% inflation)	337,500 cu. ft.
Volume (with 700% inflation)	350,000 cu. ft.
Volume (with 725% inflation)	362,500 cu. ft.
Volume (with 750% inflation)	375,000 cu. ft.
Volume (with 775% inflation)	387,500 cu. ft.
Volume (with 800% inflation)	400,000 cu. ft.
Volume (with 825% inflation)	412,500 cu. ft.
Volume (with 850% inflation)	425,000 cu. ft.
Volume (with 875% inflation)	437,500 cu. ft.
Volume (with 900% inflation)	450,000 cu. ft.
Volume (with 925% inflation)	462,500 cu. ft.
Volume (with 950% inflation)	475,000 cu. ft.
Volume (with 975% inflation)	487,500 cu. ft.
Volume (with 1000% inflation)	500,000 cu. ft.

Total weight (with 100% inflation) 4,000 lb.

Weight and Volume Summary	
Empty weight	4,000 lb.
Weight (with 75% inflation)	4,000 lb.
Weight (with 100% inflation)	4,000 lb.
Weight (with 125% inflation)	4,000 lb.
Weight (with 150% inflation)	4,000 lb.
Weight (with 175% inflation)	4,000 lb.
Weight (with 200% inflation)	4,000 lb.
Weight (with 225% inflation)	4,000 lb.
Weight (with 250% inflation)	4,000 lb.
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Weight (with 575% inflation)	4,000 lb.
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Weight (with 625% inflation)	4,000 lb.
Weight (with 650% inflation)	4,000 lb.
Weight (with 675% inflation)	4,000 lb.
Weight (with 700% inflation)	4,000 lb.
Weight (with 725% inflation)	4,000 lb.
Weight (with 750% inflation)	4,000 lb.
Weight (with 775% inflation)	4,000 lb.
Weight (with 800% inflation)	4,000 lb.
Weight (with 825% inflation)	4,000 lb.
Weight (with 850% inflation)	4,000 lb.
Weight (with 875% inflation)	4,000 lb.
Weight (with 900% inflation)	4,000 lb.
Weight (with 925% inflation)	4,000 lb.
Weight (with 950% inflation)	4,000 lb.
Weight (with 975% inflation)	4,000 lb.
Weight (with 1000% inflation)	4,000 lb.

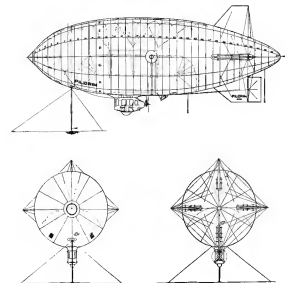
NOTE: Weight in range if gasoline is estimated for water ballast.

Curtiss Company Host to Racers

Amateurism has just been made that racing Army and Navy officers and civilian pilots who take part in the 1935 Pulitzer Prize at Mitchell Field, N. Y., will be supplied with five lodging through the courtesy of the Curtiss Company. During the week, all contestants who wish to take advantage of the offer will be taken care of in the annual and third floors of the executive building of the company at their factory at Garden City.

One floor will be assigned to Army and Navy officers and one to civilian pilots and showers, rest and other facilities have been arranged. The restaurant at the factory will be kept open at all times during the week and a hot dinner will be served on a half hourly schedule from Mitchell Field with a stop at the Curtiss Plant.

Those desiring to avoid themselves of these accommodations should notify C. S. Jones of the Curtiss Company at Garden City, L. I., or the offices of the New York 1935 Air Race, Inc., at 30 East 42nd Street, N. Y. Invitations should be sent in well in advance so that the necessary arrangements can be made.



The Leitner-Watts Metal Propeller

Uses Separate Hollow Steel Blades Set in Adjustable Hub

The British Royal Air Force have lately adopted the Leitner-Watts propeller manufactured by Metal Propellers, Ltd., as a standard service propeller. This propeller is no new invention, but the result of two years' work and research by Henry Leitner, M.I.R.E., and Dr. W. H. Watts, D.Sc., Assoc. M Inst. C.E., F.R.A.S., and an expenditure of over a quarter-million dollars in laboratory and other unproductive experiments.

Blades Are Separate

The above mentioned company has recently been formed, with the Master of Kitchin as its chairman, to fill orders for the L-W propeller both for the British government and for the leading aircraft construction authorities in Great Britain. For this purpose an extensive factory covering two and three-quarter acres of land has been acquired and equipped at Chesham with a capacity of 200 blades per week, supplied from the scrap for hub manufacture.

One of the most important advantages of the L-W propeller is that it is not an integral propeller, but has interchangeable blades fitted into two, three, four or five way hubs, according to the number of blades for the particular propeller being used for any special engine or machine. With integral propellers should a blade crack the whole propeller has to be scrapped, but in the case of the L-W propeller all that is required owing to its interchangeability in the same into the hub of a fresh blade from stores, for all blades of this size are made interchangeable, having a common standard of balance.

Some further advantages of metal over wood may be indicated, such as immunity from elastic conditions, no water and wood rot, the latter both being troublesome elements for wooden propellers and no warpage work.

The material used in the construction of the L-W propeller is super-sold mild steel sheets, but for certain specific uses when small diameter, high speed type are needed, a light aluminum alloy is used. It is of interest to note that Metal Propellers, Ltd., are at present undertaking an order for the British Air Ministry for aluminum blades, and it should be noted that unlike similar products by other firms, these blades possess the same interchangeability as those made in steel, and in fact fit into the standard steel hubs. The necessary taper in thickness for the steel blades is obtained by simple horizontal construction, which also tends to cheapen unit prices.

Blade Angle Adjusted at Hub

The blades can be adjusted in the hubs assembly through a wide range of pitch, which enables the propeller on any individual engine or airplane to function with the maximum efficiency. The pitch is adjusted by a system of vanes with a marked datum line in the hub to work from. The blades, of course, or butt, is so constructed that it is impossible, under stresses arising even with extreme peripheral speeds which may occur in use, for the blades to be torn out of the central hub.

The steel hubs are made up from forgings in two halves, and carry the Hartz shaft, drive, and gun gun flange, secured directly to the Consolidated's supercharger shaft. Several engines makers in England, including Messrs. Rolls-Royce, Messrs. D. Napier & Sons, and Messrs. The Bristol Aeroplane Co., Ltd., are now making the L-W hub under license, or otherwise a hub of their own construction for the L-W Metal Propellers with the engine and thus materially reducing the expense and weight of this item.

The length of life of the steel propeller has been found only to be limited by the durability of the steel used by the British Aeronautics on cross-hatched services, as of the L-W propellers form a delicate comparison to those known in the world. At the end of this distance the propeller was sub-

jected to an expert examination and was found to be in perfect condition throughout.



A.M. test L-W metal propeller on the test stand

With steel construction the metal gives ample warning of fatigue, namely cracks extending upward from the outer rim being the first sign, and after three small cracks at first appear it has been found that the propeller is perfectly safe to fly for 10 to 200 hours before these cracks become in any way dangerous. It will then be seen that unlike light alloy construction, in which if the propeller is going to fail it is liable to be an instantaneous bang, the steel gives such warning that a pilot is enabled to complete his journey, however long this may be, in perfect safety.

With the need for the extreme efficiency at heights the L-W propeller is now being supplied to the British Air Ministry for the supercharged Napier Lion engines fitted to the new type of service aircraft, while the largest single engine airplane in the world, the Blackburn Colossus, fitted with a 3600 hp. Napier Lion engine has performed all its tests with the L-W propeller.

Another recent supply, the Avro Andover commercial freight and passenger carrier, which is fitted with the Rolls-Royce Condor engine and is now being on the Imperial Airway London to Paris line, is using the L-W steel propeller blades fitted into a hub made by Messrs. Rolls-Royce, Ltd., specially for these blades.

Aircraft firms in England are now training their eyes toward the variable pitch propeller with its obvious advantages, particularly for high altitude work, and at the present time Metal Propellers, Ltd., are working on plans for several aircraft construction firms, which are expected to be fitted into their experimental variable pitch hubs.

Believing that compressed airships has up to date the propeller of the variable pitch propeller, Henry Leitner, M.I.R.E., the technical director of Metal Propellers, Ltd., has secured an substantially variable pitch hub, which in its functioning is as simple as at first sight is seen abroad. There is no machinery, no gear wheels or levers and cranks in this invention, but by virtue of increasing centrifugal force and thrust, and shifting their resultant form, the pitch of the propeller varies itself to suit each and every different moment. This propeller, now being produced in full scale, has been much praised by the Air Ministry who have placed an order for some experimental propellers.

Metal Propellers, Ltd., have already submitted an international competition, the object of which is to form companies, or make other adequate arrangements in the European and other countries of the world, including the United States, so that L-W propellers and hubs, the various points and design of which are protected by patents throughout the globe can be produced for these markets.

It is believed that there lies an ever increasing market for the propellers throughout the world of this steel propeller and it is expected that arrangements for their manufacture on a large scale may be completed in the near future.

Miles Doodler than Planes

Despite newspaper reports to the contrary, airplane accidents are few in number than those due to other causes. Speaking before a conference of aeronautics and business officials at the Ford Airport, Dearborn, Mich., Aug. 8, W. H. Schneider, A.S. U.S.A., former chief of staff of the Army Air Service at McCook Field, recently said:

"A case in a plane crashed in ordinary slowness flying from Los Angeles to the coast. I have noted that during a recent past night period, but they have in the entire United States while engaged in civilian flying, while during the same time, in the State of Missouri alone, 100 persons—just from in safety—were killed on death by auto."

Speed Carrier's Construction

An effort is being made by the Navy Department to speed up the construction of the aircraft carriers U.S.S. Lexington and Lexington. Encouragement has been given the author-

ties in the Navy Department by the Director of the Budget, who, as he has announced, will approve large appropriations for the Air Service, than were made by Congress last year. The department is anxious to have both of these large ships on commission at an early date as possible, and additional funds will make this possible.

The Lexington, which was launched this spring under the previous administration, should be placed in commission in October. With an increase of appropriations it is believed that this date can be advanced. The Lexington will be launched about the same time, but will be further advanced than her sister ship.

Weather Bureau Aeronautical Movies

Two new motion picture sets released by the United States Department of Agriculture show some detail the appearance of weather work that is being conducted by the Weather Bureau, and one of them gives considerably a film review of important American aeronautical services.

The first film, Exploring the Upper Air, is one and a half hours, and deals in a popular manner with the scientific side of upper-air observation work. It depicts flights by Weather Bureau meteorologists in airplanes, dirigible balloons and free balloons in the study of upper-air conditions for weather forecasting. An airplane flies above the clouds, an early journey in the neighborhood of St. Louis, the beginning and the end of a five balloon flight, the making of a "shot sound" high above the earth's surface, are among the striking scenes.

The second film, Watching the Weather Above, is two reels long. It shows the daily work of making upper-air observations at numerous stations by means of large balloons and kites, and the assembling of the information at three forecast centers—San Francisco, Chicago and Washington—and the distribution of "flying weather" forecasts from these centers to the business aviation business areas into which the United States is divided. But best the film shows the need for the forecast by means of a succession of pictures which constitute a fairly complete review of American meteorology. It depicts flights by Army airplanes and dirigible balloons. Navy explains, the great Navy service "Shenandoah" and "Los Angeles," the progress of the Air Mail planes from New York to San Francisco, the detection of forest fires by airplanes, and the "daring" of out-of-the-way trips to air ports.

The film will be circulated through the standard film service of the Department of Agriculture and the corresponding film circulation. Copies may be borrowed for testing purposes at no cost, and the film may be purchased by authorized institutions at the manufacturing charge.

Officers of Consolidated Aircraft Corp. of Buffalo with Air Service Visitors



Left to right: George Newman, factory manager; Ray P. Whitcomb, chief inspector; Thomas Kneiss, secretary-treasurer; F. E. Clark, vice president and chief engineer; R. M. Kelly, president and general manager; J. L. Kelly, president; and Capt. C. B. Kelly, Buffalo Field, and Capt. A. C. Carr, Buffalo Field, and Major Ralph Rogers, commanding officer, Buffalo Field.

Manassah, Ill., News

By Ralph B. Eddy

The Bureau served by the Mid-West Airways Corp., was set up on July 15 to the St. Louis Airways Co., which is establishing a flying field at St. Louis, Mo. The big plane was purchased from the Tuxedo Airways Co., which is in the shops of the local company and is in excellent condition when delivered to the company. A new plane is to be purchased at once by the Mid-West company.

John Livingston, pilot-manager of the Mid-West Airways Corp., took a flying trip in southern Iowa two weeks ago to let new Thomas Motor OTC engine plane, which is purchased under the name of the company and completely new. The plane performs beautifully and averaged 58 m.p.h. on a race course trip from Chicago last month.

Glen Fowler, of Burlington, Iowa, who formerly operated his own flying service, is now a pilot with the Mid-West Airways Corporation and has been used in passenger service and student training. "Al" Wilson, who knows parachute jumping, has also been making the local field headquarters this summer.

Capt. William H. Marple, Mr. Shropshire and Lieutenant Lusk, and Captain, all of Dayton, Ohio, landed at the government field here on July 18 in two Army planes, a DH and a C-46. Captain Marple is in charge of the radio laboratory at the Signal Corps attached to the Engineering Division at Dayton, Ohio, and Mr. Shropshire is an assistant commander of the Air Service. They left the next day for McCook Field.

The two planes were loaded in the field here by the radio laboratory which they were able to pick up at Indianapolis, Ohio, more than two hundred miles away. They were loaded by the Engineering Division of the Air Mail at Manassah with radio work.

Readers of Manassah and vicinity had an opportunity to see one of the Army's big blimps on Thursday, Aug. 15, when the TC-7, from St. Louis, landed here. The TC-7, which is a new blimp, was sent to Manassah, Ill., where it took part in an American Legion celebration. Arrangements for the visit here were made by Frank M. McCall and Fred Harold H. Wells, of Scott Field, who landed at the field in a DH the day before.

The blimp arrived at 9 o'clock in the morning and was in command of Lieutenant Arthur, assisted by a crew of five men. It was used to make a landing in the field. The blimp was brought down to the ground so that the crowd of 1,500 people that gathered could get a close view of it. Two of the ground crew members and a plane from the Mid-West Airways Co. were with the blimp, so in this way.

Harvey B. Monahan, of Hannanport, N. Y., designer of the "Hannan" blimp, was here by the St. Louis Airways Corp. has been in Manassah several times during the summer making minor changes in the design of the blimp, for which two different sets of wings were provided. On his last trip in August the large blimp wings were replaced and steel wire installed in place of cable flying wires.

Owen P. Harwood, who was employed during the spring as a mechanic by the Mid-West company, is making a Standard for the Duff Air Service of Goldsboro, N. C. He had the advantage to make a lower wing in a few hours than a short time ago and is now giving the ship a complete overhauling at the Manassah Field.

Paul Stender, a radio engineer from McCook Field at Dayton, Ohio, was here for several days last month assisting in the radio laboratory which is being conducted by the Duff Air Service of Goldsboro, N. C. He had the advantage to make a lower wing in a few hours than a short time ago and is now giving the ship a complete overhauling at the Manassah Field.

assist in the work. Mr. Stender produced the original blimp about several years ago before the Army took up the work.

The radio laboratory experiments are being conducted with a new DH radio plane, which was rebuilt at the Maywood shops of the Air Mail under the direction of Eddie Richards, who has rebuilt the field here annually. The plane was built with a new wing set at McCook Field, and was flown here three weeks ago by Frank Harwood, Air Mail test pilot.

The majority of the radio work is carried in the fuselage just back of the pilot's seat and the controls are on one side of the instrument board, where they can be easily adjusted by the pilot in flight. Tests are being conducted with the plane between Maywood and Manassah and are reported to be satisfactory.

Stations at the Mid-West Field have been making this season, according to date are ahead of the other two in 1935. Several flights have been made with planes in high altitude to assist their landing. In several instances marked improvement was noticed.

The field at Manassah now looks like a real airport, with the Air Mail planes and the Mid-West planes in the field, with broadcasting station, and two to three ships on the field each day.



Robert Shroyer of Glendale, Calif., and his biplane, a model of which he has built and sold to the Kansas Airways and Motor Corp. of Glendale.

Denver, Cal., News

By J. A. McHenry

Heer Yea! Heer Yea! All pilots, would be pilots, parachute jumpers, wing walkers, and those that wish to ride—"The Mile High City" is going higher! Not satisfied with being up 10,000 ft. while standing on terra firma, the Denversites are all greatly excited about flying.

There is, without doubt, a certain thrill in trying to breathe in the high altitude. Some folks with the greatest interest become mildly boring with their neighbors that they can't get the best breath. Sometimes they lose, but more often win.

And now the flight, who have survived, are going up still higher and better they can stay up as long, where there is no air at all. It is claimed that "if you can't fly in Denver, you can't fly anywhere" and if you don't believe that, come out and try it.

Chief Pilot Joe Hunsaker of the Alexander Aircraft Co., of Denver, who has been with the Colorado Airways, claims that the law of gravity does not apply here either. The airline, a main pilot, has been leveling off about 50 ft. too high in landing and taking off, and is now slowly, which is the reason for such a statement.

Truth is surely stronger than fiction. If you saw a section of the aviation firm trying to start a plane, one is the wing and the other turning the propeller, you wouldn't think it true in fiction. Yet that happened here not so long ago.

The Alexander Aircraft factory now has sixteen men at work and have six orders being the ground course. They will have finished for turning out one of the new "Republic" planes a day and have the new building completed. Denver activities are growing.

Avalon, Calif., News

The airline which has been operating between the mainland of California and Avalon, California Islands is now returning to its 1935 rate of operation. It is said that more than eight thousand passengers have been carried. R. D. Brown is the manager of the company and Joe Knepp the pilot.

A little compression of time required to make the trip to the mainland, by air and by water, is necessary. One of the two boats in regular service between here and the mainland makes the trip one way in two hours, the other takes fifteen minutes longer.

The flying boats require twenty-one minutes for the trip one way, allowing a margin of one hour and a half each way, which gives the visitor three more hours to enjoy his stay, or the business man the more extra time for his purpose. In addition to the scheduled flying boats, the company (J. A. Brown Co. 1935) has a three-place Cessna flying boat, which carries passengers every day, from the time he wakes up his home in the morning, until it gets two hours in the morning. These money's worth of looking at the bay from the air. A number of incidents are among the passengers being by Mr. Brown—in fact, are regular repairs. The flying boat here is all sorts and kind, and there are many more. The only way that starting is seen is when a strong wind from the Navy goes over town, and each time it must turn over a few times, thereby giving a number of people the impression that the ground is good enough for them.

Niles, Mich.

The Niles Airways Co. has just completed work on the equipment of their field. The field is located on the north side of the concrete road running east and west, which is one of the city's main roads, about a half mile south of the M.C.R.R. terminal. The 30 by 90 ft. hangar is now practically completed. In addition to this building the company has an office and a repair shop. The following will be located on the roof of the hangar in large letters: Niles Airways Company. A gasoline pump will be installed and a supply of good oils and fuels maintained at all times.

At the present time the company is spending two weeks for the construction of the main station and hangar. Capt. J. P. Donnell, formerly of the R.A.F., will be in charge of all flying instruction. The entire repair shop will have the control of Mr. Marple. A six passenger cabin plane is expected in the near future and the company is contemplating running a Detroit-Chicago line with it.

Argentina

The Province of Corrientes, Argentina, reports Trade Commissioner George B. Brady, has increased the subscription to the company operating the air mail and passenger service between the cities of Corrientes and Villa Delmar from 4,000 to 7,000 pesos (\$1,400 to \$2,800) per month, on the condition that an additional service to Rio Grande be inaugurated. The Villa Delmar station, which was begun in January of this year, covers the 55 mi. to Corrientes in 50 min., whereas the journey by rail is 375 mi., with three changes of trains. The 2,000 kg. planes make these round trips weekly.

Bain, Idaho

By Charles Egan

Personal relation of an aviation building field for Boise together with recommendations to the city council for an agreement will probably be made by the municipal air board here soon. Just as much as the board has been estimated on the end of growing several cities, out of the board's relation and other expenses it will begin drafting formal report.

which will be presented to the council. An action will be taken by the most favorable air and recommendations will be made to the city council in the manner of acquiring it so that the businessmen can go forward to rapidly as possible to provide the city with airport facilities.

The board feels that Boise should not go into the matter of a landing field but should secure the best possible site and as it is a fact that the airport can be built on a hill with safety and have the most suitable surrounding terrain with air for them. It was emphasized that a clear field would not only be much better than one located several miles out but it would also give Boise additional advantage in many of the commercial fields of centers after the hill is built. The plan is to let the city build the field, the board believes, and the members are going into the question about financing in order to make the most suitable.



R. S. Feltz in Cessna biplane at Lake Wausau, Wis.

First Rural Free Delivery by Air

Winnepesaukee Lake, N. H., has the honor of being the first district in which Rural Free Delivery of mail has been handled by air. The lake is a small body of water and for some time the summer residents have been looking for a way to get their mail delivered to the shore of the lake and out to the water. Through the efforts of the Winnepesaukee Lake District, the first Rural Free Delivery by air was made on July 18, 1935. The first mail was carried by a Cessna biplane, which was piloted by R. S. Feltz, of Lake Umbagog, N. H. The mail was carried from the Post Office at Lake Umbagog to the shore of the lake, where it was received by the postman.

R. S. Feltz, who is a member of the Lake Umbagog Post Office, was the first to deliver mail by air. The mail was carried from the Post Office at Lake Umbagog to the shore of the lake, where it was received by the postman. The mail was carried from the Post Office at Lake Umbagog to the shore of the lake, where it was received by the postman.

The flying machine used by R. S. Feltz in a Cessna biplane, which was piloted by a Hesperus motor. The man is only 50 years of age, but he is a pilot and he is a pilot. The man is only 50 years of age, but he is a pilot and he is a pilot. The man is only 50 years of age, but he is a pilot and he is a pilot.

"Bob" Feltz was an instructor at Lake Umbagog, Tex., during the war and has been here in commercial aviation since 1920. He is a pilot and he is a pilot. The man is only 50 years of age, but he is a pilot and he is a pilot. The man is only 50 years of age, but he is a pilot and he is a pilot.

2000 pounds of mail are brought back daily by the plane to the main post office. The air mail plane will make the first trip when it finally starts these days to receive a number of letters from the lake. The man is only 50 years of age, but he is a pilot and he is a pilot. The man is only 50 years of age, but he is a pilot and he is a pilot.



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PUBLISHER'S NEWS LETTER

The intense interest that is being taken in air transport in all parts of the world becomes more interesting daily. Transportation is being encouraged from almost where the airports are being encouraged through generous subsidies naturally give indication of progress that make American aviation. We have of "great" airplanes being under construction for the Imperial Airways. The most important evidence has in mind standardizing in equipment by using low three-engine machines for the cross-channel service.

Over a thousand passengers are carried monthly and the freight amounts to over seventy-five tons. But what is perhaps of greater importance is the statement of the Imperial Airways that according to their records, over 87 per cent of the passengers carried in 1925 travelled in three machines in 1924—a striking evidence of the repeating possibilities of air travel.

A lot of the types of freight carried has in it some extraordinary items. Live clams, whelks, artificial flowers, live show ponies, kangaroos, clams, rats, live sheep, eggs for hatching, and so on. The list of the freight that each type of plane is being of the ordinary use of goods carried. The list also includes live cows, gold watch cases, undischarged pathological specimens, armaments, gold machine parts, gloves, macawes, straw hats, aluminum pistons, tools, shippers, pump sprays, chickens, platypus, grasshopper moths, white-birds, bull bearings, uncracked coconuts, oil, flowers, boots, lenses, toilet cream, cotton, fish, seal-pups, milk, horse bells and accounts, wooden goods, boots, other, advertising matter.

Apparel, boots and shoes, insurance, surgical instruments, photographic goods, motor parts, aluminum pistons, umbrellas, chairs, painted metal, tools, toilet equipment, pocket knives, steel chairs, silk, velvet, cottons, ribbons, food products, measure instruments.

Textile furnishings, goods, machine parts, wire cranes, parts, armaments, electrical shells, steel transmission chains, chain parts, carter tools, hats, boots, point black, woads, goods, gold, fused, roller bearings, radio crystals, watch parts, wireless materials, chemicals, painted labels, hats, waterproofed moccasins, hand caskets, water meters, steel tubes.

A particularly well informed correspondent writes that it is his opinion, based on the most intimate observations, that the number of miles flown per month each year is not nearly so important as in the last several. Two of the leading air transport machines in Europe, the Handley Page-Holts-Reynolds and the Fokker F.VII, using a Napier Lion engine can be made to carry a full load in available each trip. The Fokker can fly for about 30,000 miles with only superficial inspection and the Handley Page requires detailed inspection only after 25,000 miles. In his opinion, an air transport service using either of these types or any similar machine, would of course have to have sufficient machines and engines in reserve to use whenever there were machines out of commission or it became necessary to change engines. Given these conditions a machine could be flown continuously until its time limit between inspection had expired, if full loads were forthcoming every trip, he is certain that the service would pay.

Of course, as he points out the overhead charges for heavy shifts and high interest charges would have to be cut to a minimum, and a regular flow of traffic would have to be assured. Unfortunately, it appears, the European Air Lines seem to find it necessary to have larger office and mechanical staffs that appear unwarranted when the very fluctuating traffic is considered.

Two special services were mentioned which are worthy of special mention as indication of the kind of traffic that can be developed. One was that transportation of nearly 500,000,000,000 in bullion since April, 1924, and the other was the special service rendered to Swiss manufacturers who wished to have deliveries made in England before July 1, so as to avoid an increased duty. Thirty-two tons of dutiable silk and gold watches were transported during the last three days of June from Switzerland to England, and not one cent of the service paid any of the new duties. It took only one hour to clear the goods through the Customs airport which gave another advantage over ordinary transport.

A year from now we ought to be recording similar news of American air transport companies, and not writing entirely for our enthusiasm in our Air Mail—L.D.G.

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